

In the claims

1(Currently Amended). A burnable used oil fuel product by the process comprising:

- (a) obtaining a used oil sample having at least 1% (by weight) aqueous substances;
- (b) creating a used oil stream from the used oil sample;
- ([b]c) heating the used oil sample stream to a temperature of from about 20°C to about 60°C to form a heated used oil stream; and
- ([c]d) extracting, in a continuous process, a volume of water from the heated used oil stream by adding super critical CO₂.

2(Original). The burnable used oil fuel product of claim 1 where the used oil sample has at least 6% (by weight) of aqueous substances.

3(Currently Amended). The burnable used oil fuel product of claim 1 where the heating the sample stream step is accomplished by a microwave process.

4(Currently Amended). The burnable used oil fuel product of claim 3 wherein the microwave heating energy ~~is~~ has a frequency of about 2.45 GHz.

5(Currently Amended). The burnable used oil fuel product of claim 1 wherein the extraction step is performed in a trapping vessel having a bottom valve for removing bottom components and a means for regulating pressure, whereby water and extracted solid constituents are removed from the ~~bottom~~ trapping vessel.

6(Cancelled). The method of claim 1, wherein the process further comprises settling the demulsified oil to allow for water and extracted solids to settle.

7(Currently Amended). A process for recovering burnable used oil fuel from a used oil sample, process comprising:

- (a) obtaining a used oil sample having at least 1% (by weight) aqueous substances;
- (b) creating a used oil stream form the used oil sample without a dewatering step;
- (c) testing the used oil stream for an percentage of water;
- ([b]d) when the used oil stream has greater than 4% water, microwave heating the used oil sample stream to a temperature of from about 20° to about 60° to form a heated used oil stream; and
- ([c]e) extracting, in a continuous process, a volume of water from the heated used oil stream by adding super critical CO₂.

8(Currently Amended). The process for recovering burnable used oil fuel from a used oil sample of claim 7 wherein the heating the ~~sample stream~~ step is accomplished by a microwave heating process.

9(Original). The process for recovering burnable used oil fuel from a used oil sample of claim 8 wherein the used oil sample has at least 6% (by weight) of aqueous substances.

10(Currently Amended). The process for recovering burnable used oil fuel from a used oil sample of claim 9 wherein the microwave heating energy ~~is~~ has a frequency of about 2.45 GHz.

11(Currently Amended). The process for recovering burnable used oil fuel from a used oil sample of claim 7 wherein the extraction step is performed in a trapping vessel having a bottom valve for removing bottom components and a means for regulating pressure, whereby water and extracted solid constituents are removed from ~~the~~ a bottom vessel.

12(Original). The process for recovering burnable used oil fuel from a used oil sample of claim 7 wherein the process further comprises settling the demulsified oil to allow for water and extracted solids to settle.

13(Currently Amended). An apparatus for purifying waste oil, comprising:
(a) a preprocessing analyzer section connected to an input stream for waste oil and an output;
(b) a preprocessing switch controlled by the analyzer section having an input connected to an analyzer section output and an output, the preprocessing switch having a first output and a second output;
(c) a heating section connected to the first output of the preprocessing switch ~~output~~; and a microwave heating section connected to the second output; and
(d) a demulsification section connected to [the] a heating output and having an output lower for settling.

14(Currently Amended). The apparatus for purifying waste oil of claim 13 wherein the apparatus further comprises a preheating section connected ~~upstream before~~ of the preprocessing switch.

15(Original). The apparatus for purifying waste oil of claim 13, wherein the heating section comprises both resistance and microwave heating.

16(Original). The apparatus for purifying waste oil of claim 15, wherein the microwave heating section comprises a waveguide and slurry conduit extending through a portion of the waveguide.

17(Currently Amended). The apparatus for purifying waste oil of claim 15 wherein the waveguide includes a straight member between a first end and a second end, the first end is a curved member having a 45° "H" plane bend of miter construction.

18(Original). The apparatus for purifying waste oil of claim 13, wherein the apparatus further comprises a post processing analyzer section connected to a demulsifier output, and a post-processing switch connected to a post-processing analyzer section output of the post-processing analyzer section.

19(Original). An apparatus for purifying waste oil, comprising:

- (a) a pump connected to the supply of waste oil creating a waste oil stream;
- (b) a microwave heating section heating the waste oil stream to form a heated oil stream; and
- (c) a demulsification section having a super critical CO₂ inlet and a settling outlet lower than the inlet and connected to the microwave heating section.

20(Currently Amended). The apparatus for purifying waste oil of claim 19 wherein the apparatus further comprises an analyzer section after the pump that determines a percentage of water in the waste oil stream feed.

21(Cancelled). The apparatus for purifying waste oil of claim 19 wherein the microwave heating section comprises (a) a microwave generator; (b) a signal mode wave guide connected to the microwave generator; and (c) a slurry running through the single mode wave guide.

22(Currently Amended). The apparatus for purifying waste oil of claim 21 wherein the microwave heating section further comprises a sensor connected to the microwave generator and for determining an amount of reflected energy.

23(New). The process for recovering burnable used oil fuel from a used oil sample of claim 7, further including the steps of:

- (f) when the used oil stream is not greater than 4% water, conventionally heating the used oil stream to a temperature of from about 20°C to about 60°C to form a heated used oil stream; and
- (g) extracting, in a continuous process, a volume of water from the heated used oil stream by adding super critical CO₂.